

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Appln. No.: 10/713,256

REMARKS

The Office Action of July 14, 2005 has been received and its contents carefully considered.

Claims 1 to 14 are all the claims pending in the application, prior to the present amendment.

Claims 2 to 14 have been rejected under 35 U.S.C. § 102(e) as anticipated by Ishida et al for the same reasons as set forth in the previous Office Action.

In addition, the Examiner responds to the argument that applicants submitted in the Amendment Under 37 C.F.R. § 1.111 filed on April 15, 2005.

Applicants submit that Ishida et al do not disclose or render obvious the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

Applicants' undersigned attorney spoke with the Examiner, Examiner Hoa T. Le, on November 8 and 9, 2005. The following discussion incorporates the substance of those discussions. Applicants' undersigned attorney presented above amendments to the Examiner and discussed their merits.

With respect to the recitations in claim 2 that the metallic soap is "coated directly", the Examiner asserts in the Office Action that this language does not exclude a bonding layer on the surface of uncoated zinc oxide particles.

The Examiner states in the Office Action that the zinc silicate layer in Ishida et al provides siloxane bonding to the surface of the zinc oxide particles. The Examiner states that, therefore, the coating in Ishida et al of a metallic soap on zinc oxide particles, whose surface has been pre-treated with zinc silicate, is “equivalent” to directly coating metallic soap on the zinc oxide particles, wherein the surface of the zinc oxide particles comprises siloxane bonding. The Examiner argues that the claims, therefore, are met by the teachings of the Ishida et al patent.

In response, applicants have amended claims 1 and 2 as set forth above and have canceled claim 7. Support for the amendment to claims 1 and 2 are based on the original claims 1 and 2 and Examples 1 to 5 of the specification.

Applicants submit that the present claims exclude the procedure in Ishida et al where the zinc oxide particles are first pretreated with zinc silicate.

The present invention as set forth in claim 2 as amended above is directed to coated zinc oxide particles comprising zinc oxide particles consisting of zinc oxide and a metallic soap coated directly on the zinc oxide particles, wherein the coated zinc oxide particles are produced through the process according to claim 1. In claim 1, the zinc oxide particles coated directly with a metallic soap are produced by a process comprising mixing zinc oxide particles consisting of zinc oxide with a metallic soap at a temperature equal to or higher than a melting point of the metallic soap.

The coated zinc oxide particles according to claim 2 have the following features.

- (a) zinc oxide particles consisting of zinc oxide are included;
- (b) a metallic soap is coated directly on the zinc oxide particles; and
- (c) the coated zinc oxide particles are produced through a process in which zinc oxide particles consisting of zinc oxide are mixed with a metallic soap at a temperature equal to or higher than a melting point of the metallic soap (the process of claim 1).

According to feature (a), the zinc oxide particles consist of zinc oxide, and zinc oxide particles that have a surface that has been pre-treated with zinc silicate are not involved.

Thereby, since a layer of silica, silicone, alkoxysilane or the like is not present on the zinc oxide particles of the presently claimed invention to provide siloxane bonding, minute particle size of the coated zinc oxide particles can be stably maintained, and also, a uniform refractive index can be obtained.

Therefore, as shown in Table I, excellent transmittance (0.82 to 0.91) at 550 nm can be achieved.

As described above, since the zinc oxide particles included in the coated zinc oxide particles according to claim 2 do not involve pre-treated zinc oxide particles, the coated zinc oxide particles according to claim 2 do not involve zinc oxide particles of Ishida et al which have a cover layer formed of zinc silicate directly on the surface of the zinc oxide particles.

Applicants submit that claim 2 is not anticipated by Ishida et al, since the coated zinc oxide particles according to claim 2 are not disclosed in Ishida et al. Also, since claims 3 to 6

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and 8 to 14 are dependent on claim 2 directly or indirectly, applicants submit that claims 3 to 6 and 8 to 13 also are not anticipated by Ishida et al.

Further, with respect to applicants' arguments concerning the mixing temperature, the Examiner states in the Office Action that the mixing temperature is a process limitation, whereas claims 2-14 are product claims. The Examiner states in the Office Action that as long as the product limitations are met, a rejection under 35 U.S.C. § 102 is appropriate.

The Examiner in the Office Action has completely ignored applicants' arguments with respect to the evidence in the application that the temperature does result in different products. Applicants submit that the Examiner cannot simply ignore this evidence because it establishes that different products are obtained.

Applicants' undersigned attorney explained to the Examiner the excellent transmittance shown in Table 1, and referred her to the comparison between Example 1 and Comparative Example 3 to establish the importance of the temperature during the mixing.

In particular, Example 1 of the present specification is directly comparable to Comparative Example 3 of the present specification. In Example 1, the heating mixture temperature was 140°C, which was above the 120°C melting point of the zinc stearate. In contrast, in Comparative Example 3, the heating mixture temperature of the zinc stearate was below 120°C. In Comparative Example 3, the heating mixture temperature was 100°C. Table 1 at page 20 of the specification shows that coated zinc oxide of Example 1 had improved

transmittance as compared to Comparative Example 3, as evidenced by a higher light transmittance at a wavelength of 550 nm, and also had a smaller increase in pressure during melting kneading. Accordingly, the present specification provides evidence that the process recitations that are incorporated into claim 2 result in a coated zinc oxide product that has improved properties as compared to products which were not produced in accordance with the method recited in claim 1 and, therefore, are different from products that were not produced in accordance with the method recited in claim 1.

In Ishida et al, a cover layer of zinc silicate is formed on a surface of a zinc oxide particle, and thereby surface activity is suppressed. Ishida et al disclose, at column 11, line 66 to column 12, line 9, that after the formation of the zinc silicate coating on the surface of the zinc oxide particle, a metal soap layer can be coated. However, there is no description or suggestion in Ishida et al of features (b) and (c) of claim 2 of the present application.

Thus, although Ishida et al disclose that a metal soap can be coated on a zinc silicate coating, Ishida et al do not provide any disclosure of the temperature that should be used to mix the metallic soap with the zinc oxide (feature (c)), and do not disclose that the metallic soap is coated directly on the zinc oxide particles (feature (b)).

As mentioned above, applicants' undersigned attorney spoke with the Examiner on November 8 and 9 concerning the above amendments and arguments.

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The Examiner stated during the telephone conferences that since the application is under final rejection, she would refuse to enter the proposed claim amendments if they were presented in an Amendment after final rejection, but stated that she would not make the first Office Action a final rejection in an RCE if applicants amend the claims in the proposed manner.

Further, the Examiner indicated that the proposed amendments would overcome both of the rejections that are now in the application and which remain after the cancellation of claim 7, namely, the anticipation rejection of claims 2 to 6 and 8 to 14 based on Ishida et al and the obviousness rejection of these claims based on Ishida et al and EP '132 to Maeda et al.

In view of the above, applicants submit that claims 2 to 6 and 8 to 14 are patentable over Ishida et al and, accordingly, request withdrawal of this rejection.

Claims 1-14 have been rejected under 35 U.S.C. § 103(a) as obvious over Ishida et al in view of EP '132 to Maeda et al, as set forth in the last Office Action, and for additional reasons that the Examiner sets forth in Paragraph 3.

Applicants submit that Ishida et al and EP '132 do not disclose or render obvious the presently claimed invention and, accordingly, request withdrawal of this rejection.

As discussed above, applicants have amended claim 2 to state the zinc oxide particles that are coated with a metallic soap consist of zinc oxide, and exclude zinc oxide that has a surface that has been pretreated.

EP '132 discloses a process for preparing a TiO₂ pigment by treating titanium dioxide particles with an organopolysiloxane and then with a metallic soap. See page 2, lines 46 to 57, page 3, lines 47 to 48, and page 4, line 11 to 12 which states that metallic soap is mixed after treatment with the organopolysiloxane. Thus, EP '132 does not disclose or suggest metallic oxide particles in which a metallic soap that is coated directly on metallic oxide particles that consist of metal oxide particles, but discloses zinc oxides particles that have been pretreated with an organopolysiloxane. Accordingly, even if one of ordinary skill in the art would be led to combining the teachings of Ishida et al and EP '132, one would not be led to the presently claimed invention.

Further, applicants submit that one of ordinary skill in the art would not have been led to combining the teachings of Ishida et al with those of EP '132.

In particular, applicants point out that Ishida et al disclose that ultrafine particles of zinc oxide are able to shield most UV-A rays as well as UV-B rays and they are highly transparent. Therefore, they have attracted a great deal of attention as UV-absorber in recent years. See column 2, lines 8 to 14 in Ishida et al. The ultrafine zinc oxide particles of the Ishida et al invention are able to shield UV rays, and yet they are highly transparent. See column 25, lines 10 to 15 in Ishida et al.

As described above, the coated zinc oxide particles of Ishida et al are transparent, and particles which are transparent in a visible wavelength are not regarded as pigments.

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In contrast, in EP '132 to Maeda et al, titanium dioxide particles are used as white pigments, and the invention of EP '132 is provided in view of a need in which a high degree of whiteness and a high degree of opacity are required for coated paper and film.

Ishida et al relate to particles which are transparent in a visible wavelength. However, EP '132 relates to a thermoplastic resin composition which has a high degree of whiteness and a high degree of opacity.

Therefore, one ordinary skill in the art would not have any motivation to combine the teachings of Ishida et al and EP '132 to replace the titanium dioxide particles of EP '132 which contribute a high degree of whiteness and high degree of opacity with the zinc oxide particles of Ishida et al which are highly transparent.

Since an object of EP '132 is to produce a raw material for a highly white film, whereas zinc oxide provides a transparent product, applicants submit that one of ordinary skill would not substitute one for the other. The two oxides have different properties and are used for different purposes.

As noted above, the Examiner agreed that the present amendments overcome this rejection.

In view of the above, applicants submit that claims 1 to 6 and 8 to 14 are patentable over Ishida et al and EP '132 and, accordingly, request withdrawal of this rejection.

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The Examiner has cited U.S. Patent 4,128,630 to Hayashi et al as being pertinent to some of the present claims. Although the Examiner stated the above amendments would to the claims overcome both of the present rejections, she stated during the above noted telephone conferences that she would have to evaluate Hayashi et al.

The Examiner agreed that she would not be able to make an anticipation rejection based on Hayashi et al.

Although the Examiner agreed that Hayashi et al do not anticipate the proposed claims, the Examiner stated that she would have to consider whether other prior art exists and determine whether Hayashi et al could be combined with the other prior art to render obvious the proposed claims.

Applicants submit that Hayashi et al do not disclose or suggest the presently claimed invention because Hayashi et al do not disclose a working Example showing the use of zinc oxide, do not show the mixing temperature of the present claims, and do not show the importance of the mixing temperature which is illustrated in Table 1 of the present application.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,

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